The Supplemental Poverty Measure
Under Alternate Treatments of Medical Out-of-Pocket Expenditures

Monday, December 19, 2013

Thesia I. Garner
Division of Price and Index Number
Bureau of Labor Statistics
U.S. Department of Labor
2 Mass. Ave., NE
Washington, DC 20212
Garner.thesia@bls.gov

Kathleen Short
Social, Economic, and Housing Statistics Division
U.S. Census Bureau
U.S. Department of Commerce
Washington, DC 20233
Kathleen.s.short@census.gov

Marrissa Gudrais
Division of Price and Index Number
Bureau of Labor Statistics
U.S. Department of Labor
2 Mass. Ave., NE
Washington, DC 20212

In March of 2010, an Interagency Technical Working Group on Developing a Supplemental Poverty Measure (ITWG) listed suggestions for a new measure that would supplement the current official measure of poverty. [1] The ITWG was charged with developing a set of initial starting points to permit the Census Bureau, in cooperation with the Bureau of Labor Statistics (BLS), to produce the Supplemental Poverty Measure (SPM) that would be released along with the official measure each year. Their suggestions included:

- The *SPM thresholds* should represent a dollar amount spent on a basic set of goods that includes food, clothing, shelter and utilities (FCSU), and a small additional amount to allow for other needs (e.g., household supplies, personal care, non-work-related transportation). This threshold should be calculated with five years of expenditure data for families with exactly two children using Consumer Expenditure Survey data, and it should be adjusted (using a specified equivalence scale) to reflect the needs of different family types and geographic differences in housing costs. Adjustments to thresholds should be made over time to reflect real change in expenditures on this basic bundle of goods at the 33rd percentile of the expenditure distribution.

- *SPM family resources* should be defined as the value of cash income from all sources, plus the value of in-kind benefits that are available to buy the basic bundle of goods (FCSU) minus necessary expenses for critical goods and services not included in the thresholds. In-kind benefits include nutritional assistance, subsidized housing, and home energy assistance. Necessary expenses that must be subtracted include income taxes, Social Security payroll taxes, childcare and other work-related expenses, child support payments to another household, and contributions toward the cost of medical care and health insurance premiums, or medical out-of-pocket costs.

This year the Census Bureau, with support from the BLS, released the third report on the SPM. The SPM recognizes the necessity of accounting for medical care needs, including health insurance premiums, in a poverty measure. The approach is to deduct actual reported out of pocket medical care expenditures from family resources before evaluating where a family stands in relation to the poverty threshold. The SPM thresholds are based on expenditures for food, clothing, shelter and utilities plus a little bit more for other personal items. Medical care spending is not included in the list of items that define the SPM thresholds.

1 For information, see ITWG, *Observations from the Interagency Technical Working Group on Developing a Supplemental Poverty Measure* (Interagency), March 2010, available at <www.census.gov/hhes/www/poverty/SPM_TWGObservations.pdf>, accessed September 2011.

As outlined by the ITWG, medical out-of-pocket expenses (MOOP) are subtracted from income in calculating the resources available to a family. Accounting for out-of-pocket medical expenditures in this way assures that dollars spent on medical care are not considered available to purchase food or shelter. Self-reported out-of-pocket medical expenses were collected in the Current Population Survey Annual Social and Economic Supplement (CPS) for the first time in 2010. These appear to be reasonably reliable for statistical adjustment purposes (Caswell and O'Hara, 2011).

How to incorporate medical expenses in a poverty measure was a source of debate following the release of the National Academy of Sciences (NAS) study to improve the measure of poverty (Citro and Michael, 1995). They recommended the approach currently used in the SPM calculations, to subtract reported expenses from income before determining poverty status.

The conceptual framework for the treatment of MOOP comes from the NAS report:

> However, any attempt to develop thresholds that appropriately recognize needs for medical care runs into the second problem: that such needs are highly variable across the population, much more variable than needs for such items as food and housing. Everyone has a need to eat and be sheltered throughout the year, but some people may need no medical care at all while others may need very expensive treatments. One would have to develop a large number of thresholds to reflect different levels of medical care need, thereby complicating the poverty measure. Moreover, the predictor variables used to develop the thresholds (e.g., age, or self-reported health status) may not properly reflect an individual's medical care needs during any one year: some people in a generally sicker group may not be sick that year and vice versa for people in a generally healthier group. The result would be that it would be very easy to make an erroneous poverty classification. (Citro and Michael, p. 224)

The Panel recommended "…that out-of-pocket medical care expense (including health insurance premiums) be subtracted from income" (Citro and Michael , p. 225).

Following the release of their report, however, a second approach was proposed that would enhance the portability of poverty thresholds for use with a variety of data sources, by including medical expenses in the poverty thresholds along with other basic needs (Bavier, 1998, 2000). These thresholds were referred to as FCSUM thresholds. This approach was implemented in a

Census Bureau report on experimental poverty measures that was released following the NAS panel recommendations.

Short (2001) discussed the inclusion of medical expenses in the experimental measures presented in the Census Bureau report. That discussion noted that the NAS panel was aware that expenditures for health care are a significant portion of a family budget and have become an increasingly larger budget item since the 1960s. The panel considered including health care in the thresholds with food, clothing, and shelter needs, but decided against it. They argued that medical care needs differ from the need for food or housing in that not every family requires medical care in a given year, but when they do, the associated costs may be extraordinarily large. They concluded that it would be impossible to capture the actual variation of medical needs by variations in the thresholds and that this could lead to what the panel termed "erroneous poverty classification." Instead, they developed a method that was intended to represent "actual" MOOP spending. These expenses include the payment of health insurance premiums plus other medically necessary items such as prescription drugs and doctor co-payments that are not paid for by insurance. Subtracting these "actual" amounts from income, like taxes and work expenses, leaves the amount of income that the family had available to purchase the basic bundle of goods (food, clothing, shelter, and utilities (FCSU) and a "little bit more").

The NAS recommendations raised issues of implementation (see Bavier, 1999 and Bavier, 2000). At that time, information on families' health care expenses were only collected in a few household surveys. The NAS treatment of medical needs would require surveys and administrative data sets to ask families directly and extensively about out-of-pocket medical expenditures or, as was done for the earlier report, to use statistical methods to assign amounts to each family. In light of both the conceptual and practical issues raised by the panel's proposal for handling medical needs, Short (2001) included an alternative treatment. This treatment parallels the panel's recommendations for poverty thresholds based on expenditures for food, clothing, shelter, and a little more, but includes out-of-pocket medical spending in the thresholds (see Banthin et al, 2000 and Short and Garner, 2002).

This second method of accounting for medical needs required an additional equivalence scale for the medical portion of the FCSUM threshold for a broad set of families. Using the 1996 Medical Expenditure Panel Survey (MEPS), a set of medical equivalence scaleswas calculated for different family types based on differences in health insurance coverage, self-reported health status, presence of elderly family members, and family size. In addition, they included an adjustment for the uninsured. Including these expenses in the thresholds rather than subtracting them from income changes poverty rates considerably. Short and Garner (2002) showed that experimental poverty rates were higher in 2000 when medical expenses were included in the thresholds rather than subtracted from income. The experimental measure that subtracted MOOP from income (referred to as MSI) showed a poverty rate of 12.2 percent compared with a rate of 12.7 percent when MOOP was included in the thresholds (referred to as MIT).

In an NAS sponsored workshop on poverty measurement held in 2004, there was discussion on how to account for MOOP (National Research Council, 2005). This workshop took place after the Census Bureau 2001 report had presented the second MOOP method. The workshop summary stated,

> Rebecca Blank (University of Michigan) summarized her impression of the wide-ranging discussion: "We should account for … medical out-of-pocket expenses; we should do some adjustment for the uninsured; and we should top code the calculation, to get rid of those who really hit catastrophes, with the idea that that's picked up in some other ways…." However, she noted, there really was substantial disagreement about whether medical out-of-pocket expenses should go into the threshold or should be imputed into people's income.

Discussion and suggestions for the treatment of health care in the SPM continues. One area of discussion about MOOP represents a more general issue that comes up in criticisms of the SPM. This issue revolves around the discrepancy between actual out-of-pocket expenses and a measure of need/consumption. Caswell and Short (2011) estimated how the SPM would look with an adjustment for the constrained spending of the uninsured. A recent report on developing a Medical Care Risk Index suggested an additional index that would accompany the release of the SPM by the Census Bureau (National Research Council and Institute of Medicine, 2012). Korenman and Remler (2013) reconsidered the treatment of health care in the SPM and

acknowledged the challenges inherent in the most appropriate method for doing so. Sommers and Oellerich (2013) presented an approach that explicitly included Medicaid in the SPM.

This paper begins a re-exploration of incorporating health care in the SPM thresholds. We start by updating previous estimates reported in Banthin et al. 2000, Short 2001 and Short and Garner, 2002. The calculations presented here, however, are grounded in the SPM method of deriving thresholds that differs in important ways from thresholds designed following the NAS recommendations. In addition, there is no longer an adjustment for the spending by the uninsured, following recommendation 2-4 as noted in the NRC 2012 report on the Medical Care Risk Index, "The Census Bureau should not model potential spending for people lacking health insurance coverage." In the following sections, the calculation of SPM thresholds with MOOP is described. First, more detail is provided on previous calculations and then we update and refine those calculations used in previous reports. The final section presents SPM rates using the MOOP in the thresholds (MIT) method and the research SPM that subtracts MOOP from income, for comparison.

Background -- Medical out-of-pocket expenses included in the thresholds: NAS measures

The measure reported in Short (2001) departed from the approach taken by the panel to move the accounting for medical needs from the resource side of a poverty measure to the threshold side. The first step of this calculation included medical out-of-pocket expenditures in the calculation of the basic bundle of the two-adult, two-child reference family, thus expanding the set of basic needs to include medical expenses that are generally paid by the individual or family. Additional variability in the thresholds was assigned to each family, based on characteristics associated with variations in medical care utilization and cost. In the case of the uninsured, an adjustment was made to reflect the underutilization of health care by the uninsured (see Banthin et al., 2000 for details).

The next step of the formulation of thresholds that include MOOP incorporated an expanded set of characteristics. To accomplish this, information from the 1996 MEPS was used to adjust the thresholds to vary by important determinants of expenditures that differ from those of the two-adult, two-child reference family. **Table A10** (reproduced from Short, 2001) shows risk factors

for MOOP expenditures by size of family, numbers of persons in various age groups in the family, and insurance coverage as calculated from median MOOP with an adjustment for the uninsured. The table also shows means of expenditures for comparison.

To produce the MEPS-based table, total expenditures were calculated directly except for the uninsured, for whom a predicted expenditure based on total expenditures of the insured with similar characteristics was substituted. This procedure was done in response to concerns that medical expenditures of those without insurance are so constrained that they do not provide reasonable estimates of adequate medical care (see Wolfe, 2000).

In the final step, these factors were used to adjust the medical care portion of the basic threshold bundle. Using the estimate from the Consumer Expenditure Survey (CE) that medical care spending represents approximately 6 percent of spending on food, clothing, shelter, utilities and medical care (FCSUM) in 1999, the MOOP portion of the thresholds based on risk factors of families by the relevant characteristics was calculated. The FCSU portion of the thresholds was adjusted for family size differences using the three-parameter equivalence scale, as discussed elsewhere. **Table A10** from that report , reproduced in the appendix of this paper, shows the amounts added to thresholds for the family types listed under this method. For comparison to the method used in the MSI measures, the table also shows computed mean amounts subtracted from income for these groups using the revised NAS method.

While the ITWG document preferred subtracting MOOP from income, researchers show continued interest in the second approach. Those using other data sets to calculate an SPM-like measure find using thresholds that include MOOP is preferred. This is particularly true for data sets that contain little information on the relevant dimensions of the SPM, such as the American Community Survey (ACS). For official poverty estimates for state and sub-state geographic units, the Census Bureau recommends the use of the ACS. On April 1, 2011, the Census Bureau sponsored a workshop at the Urban Institute on State Poverty Measurement Using the American Community Survey. The workshop participants discussed the challenges involved in using the ACS to produce SPM estimates. The ACS lacks a number of key data elements required to produce SPM estimates. The ACS does not ask whether or not anyone in a household receives housing assistance, participates in the school lunch program, receives benefits from the

Supplemental Nutrition Program for Women, Infants, and Children (WIC) or low-income home energy assistance (LIHEAP). It does not ask the value of Supplemental Nutritional Assistance Program (SNAP, formerly food stamp) benefits. Most important, there is no information on medical out-of-pocket expenditures (MOOP).

Despite these limitations, researchers have been actively involved in exploring ways in which the ACS data can be used to produce NAS-based and/or SPM poverty estimates. The New York City Center for Economic Opportunity has produced NAS-based estimates for 2005 to 2010. The Urban Institute has created a NAS-style measure for Minnesota, Connecticut, Georgia, Massachusetts and Illinois and the Institute for Research on Poverty at the University of Wisconsin has implemented NAS-based measure for the state of Wisconsin.[2] More recent applications have been produced for Virginia (Cable, 2013) and California (Bohn et al., 2013).

There are a variety of treatments for the inclusion of MOOP in these measures. As noted, due to the ease of implementation, many research groups using the ACS for SPM estimates have preferred to use this second method to incorporate health care needs in a poverty measure for local areas (Zedlewski et al., 2010, Isaacs et al, 2011, and Cable, 2013). Like the measure examined in this paper, they add MOOP to thresholds in some way and adjust for characteristics by 1996 MEPS-based factors varying by insurance, health, and elderly status and size of family, using ACS reported insurance status.

Thresholds that include MOOP and risk factors using CE data

Data

The CE is the data source used for the production of the SPM thresholds. The CE Survey is composed of two components, the Interview and the Diary. The Interview is used to collect expenditures on almost all goods and services purchased by consumers in the U.S. The Diary is designed to collect expenditures that are frequently purchased items. The Interview is used to collect expenditures over the three months prior to the interview, with data collected up to four

2 For a comparison of the methods used by each of these groups, see Betson et al, 2011.

times for each consumer unit. The Diary is a weekly record-keeping of frequently purchased goods and services; each consumer unit is to provide data for two consecutive weeks.

We use the Interview component of the CE Survey as we consider this to be a better source of data for the SPM thresholds. We base this on the fact that the Interview provides a more comprehensive set of expenditures, with one exception, over a longer period of time as compared to the Diary. The exception is that global questions are used to collected food expenditure data in the Interview while detailed food expenditures are collected in the Diary. Nonetheless, since all of the other data are from the Interview, we use the Interview globally reported expenditures for our analysis and estimation.

As presented in the ITWG, five years of CE Interview data are used to produce the SPM thresholds. For the 2011 thresholds, the collection period of the data begins with 2007 quarter two and ends with 2012 quarter one. The reference period for each quarter of data includes the previous three months prior to the interview month. For example, data collected in April 2007 refers to expenditures for January, February, and March 2007. Quarterly expenditures are converted to 2011 dollars using the Consumer Price Index (CPI) All Items CPI U.S. City Average. Annual CPIs are used to adjust all but the last quarter of CE Interview data; for 2012 quarter one data, a quarterly CPI for this quarter is used to deflate expenditures to 2011 annual dollars.

The SPM thresholds produced for this study are based on quarterly out-of-pocket expenditures for food, clothing, shelter, utilities, and medical care. Medical expenditures collected in the Interview are for non-over-the-counter goods and services only; data on over-the-counter medical care is only collected through the use of the CE Diary. Food expenditures implicitly include those made with SNAP benefits and WIC when debit cards are used as it is assumed that consumer units use these debit cards to buy food before other sources of funds. All other expenditures are those made by consumer units out-of-pocket and do not include any subsidy values, for example, shelter expenditures do not reflect the value of housing subsidies and utility expenditures do not include energy subsidies.

To derive the thresholds, expenditures are restricted to those of consumer units with exactly two children; this group of consumer units is referred to as the estimation sample. Data on

housing status is used to produce housing tenure specific thresholds. Housing tenure defined as owners with mortgages, owners without mortgages, and renters.[3]

For this exercise, and for previously published SPM and NAS thresholds, quarterly CE data are assumed to be independent although each consumer unit can conceivably be in the threshold estimation sample up to four times. Over the five year period, there are 138,201 interviews.

SPM Thresholds Based on FCSUM for Reference Consumer Unit

The ITWG stated that the thresholds are to be based on the expenditures of an estimation sample composed of consumer units with two children. This diverges from the NAS recommendations, which used a two-adult, two-child reference family unit. In the 19 years since the NAS report, however, the composition of families in the U.S. has continued to change and a growing number of children live in families with only one adult, particularly in lower-income households. There are a variety of advantages to calculating the threshold from somewhat similar families, so the continuing use of two-child family units is recommended while allowing these two children to live in a wider variety of family settings. Expenditure data for family units with two children that do not contain two adults are adjusted using the equivalence scales so that their expenditures are equivalent to those of a family unit with two adults and two children. When medical care expenditures are included in the thresholds, two equivalence scale adjustments are needed: 1) to account for the differences in FCSU spending needs by household composition and economies of scale in consumption and 2) to account for the differences in medical care spending needs by household composition and health insurance status. Another difference in the NAS and SPM thresholds is with the SPM, thresholds are to be produced to account for the differences in spending needs by housing tenure, whether a consumer units rents, owners his or her home with or without a mortgage.

The three-parameter equivalence scale is used to adjust FCSU for each consumer unit in the estimation sample. This scale allows for a different adjustment for single parents (Betson,

3 The CE data, public use as well as internal, include a housing tenure variable; however, for the purposes of producing SPM thresholds we use additional spending data on shelter to refine the housing tenure status variable. For example, when a renter reported mortgage payments but did not report rent payments, we reclassified the consumer unit to be an owner with a mortgage.

1996). The scale has been used in productions of the NAS and SPM thresholds in the past. The three-parameter scale is shown below.

One and two adults: $scale = (adults)^{0.5}$ (1a)

Single parents: *scale* = [illegible] (1b)

All other families: *scale* = [illegible] (1c)

In the computer program used to produce expenditures for the reference consumer unit composed of two adults and two children, the scale is set to 1.41. The economy of scales factor is set at 0.70 for other family types. The number of equivalent adults in a two-adult, two-child family is $3^{0.7}$.

A medical equivalence scale for all consumer units in the estimation sample is obtained by dividing average MOOP for subgroups of two-child consumer units by reference consumer unit MOOP spending. Such an adjustment was not necessary before deriving the NAS FCSUM threshold since the estimation sample and the reference sample were the same; both included exactly two adults and two children. Since the FCSUM thresholds are based on five years of CE data, the medical equivalence scale for the derivation of the reference consumer unit threshold is also based on five years of CE data.

The key in the use of a medical equivalence scale is to convert medical care expenditures into the same unit as FCSU expenditures are presented, those for two adults with two children. This step is necessary before reference unit SPM thresholds can be derived using the full distribution of spending on FCSUM. By making this adjustment at the CU level, we are able to preserve the assumption that consumer units can make trade-offs in spending among goods and services in the threshold FCSUM bundle that reflect their preferences. In other words, like consumer units could decide to spend more or less on different commodities to meet their needs. For example, one could decide to spend more on healthy food and less on medical care while another might decide to spend less on healthy food and more on medical care.

To obtain the medical equivalence scales, subgroups are defined following the CE-based option presented in Banthin, et al. (2000). The scales are based on number of people in the consumer

units and health insurance status, whether the consumer unit has private insurance, only public insurance, or is uninsured. Other scales in the earlier study accounted for health status with adjustments for the uninsured; also all elderly were assumed to be insured. We do not use health status since this variable is not available in the CE data. The medical equivalence scale is based on actual spending.

Population weighted average annual MOOP, in 2011 dollars, are presented in Table 1 for all two child consumer units in the threshold estimation sample. Two-adult, two-child consumer units spent on average $3,185 in 2011 on medical care, using five years of CE data. The medical equivalence scales ranges from a low of 0.244 for uninsured two-child consumer units with three or more adults, with at least one elderly person to a high of 1.849 for privately insured two-child consumer units with three or more adults, with at least one elderly person.

Table 1. Average Medical Out-of-Pocket Expenditures in 2011 Dollars for Consumer Units for Two Children Only and Estimation

			Sample Size	Mean	Standard Error	Estimation Sample Medical Equivalence Scale
All Consumer Units with 2 Children			17,177	$2,902	$70	
Missing from group below			0	N/A	N/A	
1	2A+2c	all	11,654	$3,185	$82	1.000
Consumer units with 1 or more adults, but with 2 children						
2	1 adult, non elderly	private	1,263	$2,302	$137	0.723
3	3 or more adults, non elderly	private	1,571	$3,723	$163	1.169
4	1 adult, non elderly	public	749	$272	$39	0.085
5	3 or more adults, non elderly	public	486	$675	$88	0.212
6	1 adult, non elderly	uninsured	408	$554	$157	0.174
7	3 or more adults, non elderly	uninsured	407	$759	$179	0.238
8	1 adult, elderly	private	4	$4,181	$940	1.313
9	3 or more adults, elderly	private	460	$5,888	$332	1.849
10	1 adult, elderly	public	7	$2,005	$852	0.629
11	3 or more adults, elderly	public	137	$1,685	$177	0.529
12	1 adult, elderly	uninsured	0	N/A	N/A	
13	3 or more adults, elderly	uninsured	31	$777	$422	0.244

Authors' own calculations using U.S. Consumer Expenditure Interview Survey data for 2007Q2-2012Q1.

Once all two-child consumer unit FCSUM expenditures were converted to equivalized two-adult, two-child FCSUM expenditures, these expenditures were ranked from lowest to highest. The mean of the 30th to 36th percentile range of FCSUM expenditures was used to approximate the 33rd percentile. The ITWG guidelines were that the SPM would be based on a dollar amount at

the 33rd percentile of the distribution while the NAS recommended a range around a percentile point. This point sets the SPM threshold based on a level of spending on FCSUM that two-thirds of American families are able to achieve or exceed.

The SPM thresholds are produced for the three housing tenure types: owners with mortgages, owners without mortgages, and renters. To produce housing-based FCSUM thresholds, the shelter and utility expenditures for the estimation sample within the FCSUM range distribution is substituted by the shelter plus utility expenditures for each housing tenure type. Equation (4) is the equation used to produce the reference family SPM thresholds for each housing tenure. To explain how we arrived at equation (4), let's go through the steps. First, if we were only interested in thresholds based on mean FCSU expenditures in the 33rd percentile range, this FCSU mean would be multiplied by 1.2 to account for spending needs associated with other basic goods and services, for example, personal care products (see step 1 and equation 2 below). This multiplier is the midpoint of the multipliers recommended by the NAS Panel when thresholds are based on FCSU only. Thus, when moving forward to include medical care in the set of goods and services upon which the SPM thresholds are based, the multiplier is applied only to the non-medical portion of FCSUM, $(1-m_{FCSUM})$. This is represented in step 2 and equation (3). With the extension to account for differences in housing spending needs, an additional adjustment is needed as noted in step 3and the final equation (4).

Step 1.

FCSU-based thresholds, accounting for other goods and services:

$$= (1.2 * FCSU_A) \qquad (2)$$

Step 2.

FCSUM-based thresholds, adding medical care to FCSU:

$$= (1-m_{FCSUM})(1.2 * FCSUM_A) + (m_{FCSUM} * FCSUM_A) \qquad (3)$$

Step 3.

FCSUM-based thresholds, accounting for differences in needs by housing tenure:

$$SPM_i = (1-m_{FCSUM})(1.2 * FCSUM_A) + (m_{FCSUM} * FCSUM_A) - (S+U)_A + (S+U)_i \qquad (4)$$

SPM_i Supplemental Poverty Measure Threshold for *i* housing tenure group

1.2 multiplier for other basic goods and services

FCSUM out-of-pocket spending for food (F), clothing (C), shelter (S), utilities (U), and medical care (M)for consumer units composed of two adults and two children, the reference unit

m_{FCSUM} MOOP share of FCSUM expenditures

A consumer units in the estimation sample within the 30th to 36th percentile range of FCSUM expenditures

i housing tenure groups: owners with mortgages, owners without mortgages, and renters

For 2011, the MOOP share of FCSUM expenditures (*m*), within the 30th to 36th percentile range is 8.1 percent.

Reference consumer unit thresholds are presented in Table 2 by housing tenure. First presented is the official poverty threshold for 2011. The second set of thresholds are the SPM thresholds for FCSU used in the SPM report. The third set are the FCSUM thresholds that are based on using a medical equivalence scale to adjust for differences in spending by number of people in the consumer unit and health insurance status.

Table 2: Two Adult, Two Child Poverty Thresholds: 2011 (dollars)		
	2011	s.e
Official	22,811	-
Research Supplemental Poverty Measure		
Owners with a mortgage	25,703	347
Owners without a mortgage	21,175	298
Renters	25,222	378
Research Supplemental Poverty Measure with MIT		
Owners with a mortgage	28,057	421
Owners without a mortgage	23,191	348
Renters	27,477	449
Source: Consumer Expenditure Survey, various years		

SPM Thresholds Based on FCSUM for Other Consumer Units

Once the reference consumer unit thresholds are produced, three adjustments are applied to the set of FCSUM thresholds to derive thresholds for consumer units with different compositions, health status, and housing cost differences. The first is the three-parameter

equivalence scale, presented in equations (1a)-(1c), applied to the non-medical part of the SPM FCSUM threshold, $(1-m_{SPM})$, as opposed to the non-medical part of FCSUM, $(1-m_{FCSUM})$. The second is a medical equivalence scale that is somewhat different from the one used for the estimation sample; this scale is based on expenditures of all consumer units and is applied to the medical part of the thresholds, m_{SPM}. The third adjustment is a geographic adjustment for differences in housing costs across areas; this is applied only to the housing (shelter plus utilities) part of the thresholds. For these adjustments it is necessary to produce SPM threshold-based shares of medical care and housing out-of-pocket expenditures. Implicit expenditures for food, clothing, shelter plus utilities, medical care, and other are presented in Table 3.

Table 3. Annual Average Out-of-Pocket Expenditures Implicit in SPM Thresholds Based on FCSUM: 2011

		Mean	Standard Error
Food		$7,552	$130
Clothing		$1,056	$46
Shelter and Utilities			
	Owners with mortgages	$13,360	$298
	Owners without mortgages	$8,495	$337
	Renters	$12,781	$364
Medical Care		$1,859	$97
Other		$4,230	$61

Authors' own calculations using the U.S. Consumer Expenditure Interview Survey data from 2007Q2-2012 Q1.

Following the CE-based method used by Banthin, et al., (2000), the medical care part of the FCSUM thresholds are adjusted by a total population medical equivalence scale. For these equivalence scales it is assumed that all elderly are covered by health insurance. Also, these differ from earlier thresholds because there is no adjustment for the uninsured. Since 2011 SPM thresholds are designed to be compared to 2011 resources from the Annual Social and Economic Supplement to the Current Population Survey (CPS ASEC), we derive a full sample medical equivalence scale based on annual average out-of-pocket medical care expenditures for 2011. Thus, the medical equivalence scale applied to reference two-adult-two-child SPM thresholds is based on CE Interview data from 2011Q2-2012Q1.

The SPM threshold medical equivalence scales that we use for this study are presented in Table 4 and are labeled as "Based on CE Means." Medical out-of-pocket expenditure annual means using CE data are presented along with replicate weight standard errors. Full sample medical equivalence scales using the CE data are obtained as the ratio of annual average expenditures for each consumer unit type relative to those of the reference consumer unit composed of two adults and two children.

Table 4. Average Consumer Unit Medical Out-of-Pocket Expenditures in 2011 Dollars for All Consumer Units

			Sample Size	Mean	Standard Error	Fuall Sample Medical Equivalence Scale	Standard Errors for Equivalence Scale
Total			26,959	$3,134	$58		
Missing from group below			143	$1,365	$587		
1	2A+2c	all	2,238	$3,324	$121	1.000	0.052
2	1 person	private	3,183	$2,028	$84	0.610	0.034
3	2 people	private	3,916	$3,781	$109	1.137	0.053
4	3 or more	private	4,751	$4,139	$174	1.245	0.069
5	1 person	public	607	$760	$151	0.229	0.046
6	2 or more	public	1,808	$782	$60	0.235	0.020
7	1 person	uninsured	1,490	$491	$41	0.148	0.014
8	2 or more	uninsured	2,025	$816	$73	0.245	0.024
9	1 elderly	private	1,823	$3,845	$142	1.157	0.060
10	2 or more elderly	private	3,223	$6,391	$200	1.923	0.092
11	1 elderly	public	927	$1,669	$113	0.502	0.039
12	2 or more elderly	public	825	$3,243	$238	0.976	0.080

Authors' own calculations using U.S. Consumer Expenditure Interview Survey data for 2011Q2-2012Q1.

Poverty rates using SPM MIT thresholds

Data

The CPS ASEC is designed to give annual, calendar-year, national estimates of income and official poverty numbers and rates. The CPS is primarily a labor force survey, not an income survey, and is conducted every month by the Census Bureau for the Bureau of Labor Statistics using Computer-Assisted Telephone Interviewing (CATI) and Computer-Assisted Personal Interviewing (CAPI). The Basic CPS is used to calculate the monthly unemployment rate estimates. Supplements are added in most months; the ASEC is conducted in February, March, and April with a sample of about 100,000 addresses per year. The questionnaire asks about income from more than 50 sources and records up to 27 different income amounts, including receipt of numerous noncash benefits, such as Supplemental Nutrition Assistance (formerly known as the food stamp program), subsidized school lunches, and housing assistance.

The poverty estimates in in this paper use the 2012 CPS ASEC. In addition to the basic CPS questions, interviewers asked supplementary questions for the ASEC. They asked these questions of the civilian noninstitutional population and of military personnel who live in households with at least one other civilian adult. The additional questions covered many topics such as household and family characteristics, geographic mobility, health insurance coverage, self-reported health status, and MOOP expenditures. Including the basic CPS sample, approximately 96,700 housing units were in sample for the ASEC. About 82,300 housing units were determined to be eligible for interview, and about 75,100 interviews were obtained.[4]

Table 5 shows poverty rates and number of people classified as poor for two measures, the SPM as reported in Short (2012)[5], and a similarly calculated measure with one exception -- we include MOOP in the FCSUM thresholds shown in Table 2 above and do not subtract reported MOOP from resources. Those thresholds are assigned to families with two adults and two children,

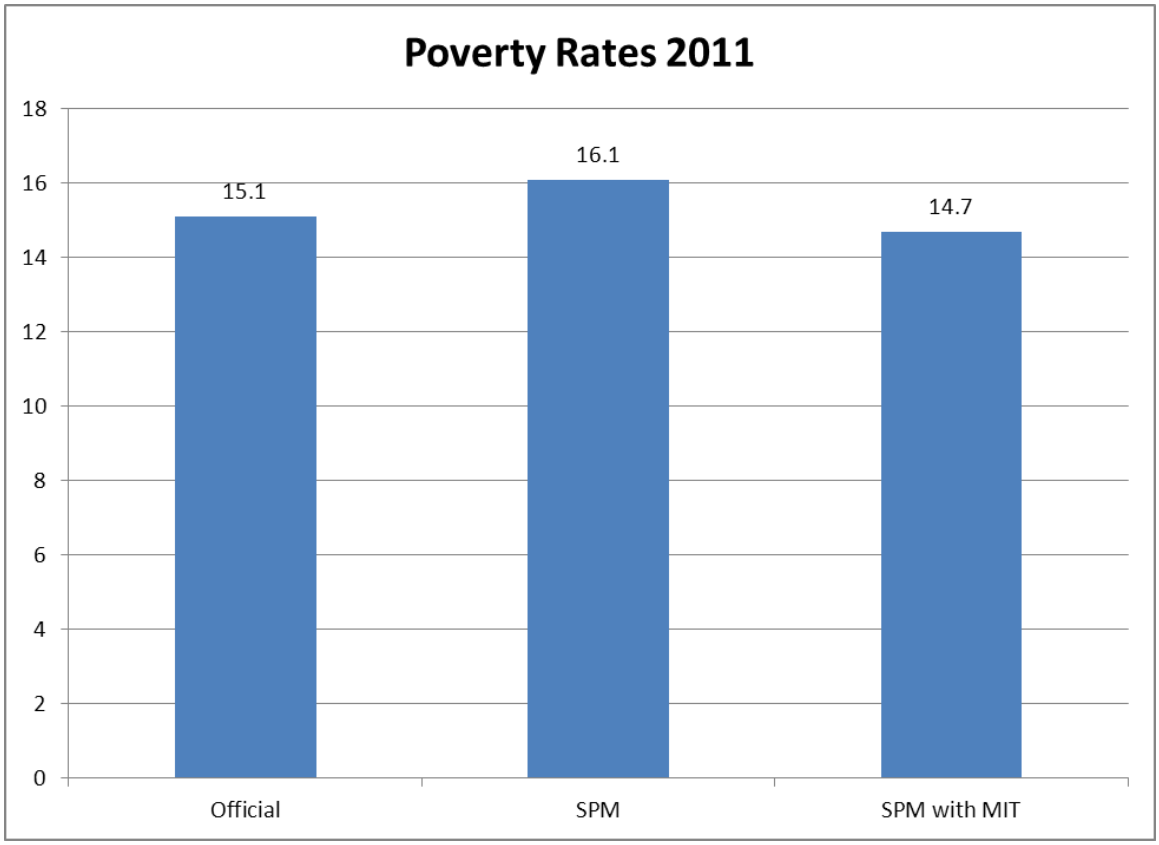
4 The additional sample for the ASEC provides more reliable data for Hispanic households, non-Hispanic minority households, and non-Hispanic White households with children 18 years or younger. These households were identified for sample from previous months and the following April For more information about the households eligible for the ASEC, please refer to Technical Paper 66, *Current Population Survey: Design and Methodology*, U.S. Census Bureau, U.S. Department of Commerce, 2006. <www.census.gov/prod/2006pubs/tp66.pdf>.

5 Estimates for calendar year 2011 differ from previously published estimates due to improvements to the tax calculations and estimates of WIC receipt.

while thresholds for family units of other sizes and health insurance coverage are adjusted using the ratio of means for each CU relative to the reference two-adult, two-child CU shown in table 5. These adjustment factors replace those shown in Table A10 and based on 1996 MEPS data.

Chart 1 shows that including MOOP in the SPM thresholds results in significantly lower poverty rates for all persons, 14.7 percent compared to 16.1 percent with the SPM. Table 6 shows lower poverty rates and smaller numbers of people classified as poor for nearly all groups displayed except for Asians using the measure that includes MOOP in the threshold, the SPM MIT.

Chart 1



It is more interesting to look at differences in the composition of the poverty populations using the two measures. These computations are shown in Table 6. For example, there is a slightly lower percentage of males and a slightly larger percentage of females included in the poverty population defined by including MOOP in the thresholds. Other groups with a smaller representation using the SPM MIT are those 65 years of age and older, people in married couple units, Whites, those who are native born, homeowners, anyone living outside principal cities or in the Midwest or the South, individuals with private insurance, workers, and individuals with a disability. These individuals likely represent groups for whom self-reported MOOP expenditures in the CPS, that are subtracted from each units' resources in the SPM, are higher than the mean values that are represented in the SPM MIT thresholds.

It is interesting to note that previous estimates, using the NAS measures, gave the opposite result, that is higher poverty rates when MOOP was in the threshold rather than subtracted from income (Short and Garner 2002). That result suggested that for more groups, average MOOP spending exceeded the amount subtracted from income. With these calculations the average amount in the threhsolds is below that of reported expenses. There are two explanantions for this result. First the NAS measures modeled MOOP expenses rather than using reported amounts. These modeled amounts may have underestimated MOOP spending for some groups. Secondly, the CE estimation sample used for the SPM threhsolds includes a different group of people than that used for the NAS type thresholds, as noted above. The NAS thresholds were based on expenditure reports of two-adult and two-child families, a group that has a high probability of premium expenditures for employer-based health insurance relative to the estimation sample used for the SPM thresholds. This outcome will be addressed in further work.

Table 5: Number and Percent of People in Poverty by Different Poverty Measures: 2011

(Numbers in thousands, confidence intervals (C.I.) in thousands or percentage points as appropriate. People as of March of the following year. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see www.census.gov/apsd/techdoc/cps/cpsmar12.pdf)

	Number** (in thousands)	SPM with MIT				SPM				Difference SPM vs SPM with MIT			
		Number		Percent		Number		Percent					
		Est.	90 percent C.I.† (+/-)	Est.	90 percent C.I.† (+/-)	Est.	90 percent C.I.† (+/-)	Est.	90 percent C.I.† (+/-)	Number		Percent	
All People	308,827	45,433	855	14.7	0.3	49,567	902	16.1	0.3	4,134	*	1.3	*
Sex													
Male	151,175	21,029	452	13.9	0.3	23,057	473	15.3	0.3	2,028	*	1.3	*
Female	157,653	24,405	479	15.5	0.3	26,511	502	16.8	0.3	2,106	*	1.3	*
Age													
Under 18 years	74,108	12,875	365	17.4	0.5	13,349	376	18.0	0.5	474	*	0.6	*
18 to 64 years	193,213	27,757	554	14.4	0.3	29,971	578	15.5	0.3	2,213	*	1.1	*
65 years and older	41,507	4,801	202	11.6	0.5	6,247	229	15.1	0.5	1,447	*	3.5	*
Type of Unit													
In married couple unit	186,235	15,766	620	8.5	0.3	18,488	631	9.9	0.3	2,722	*	1.5	*
In female householder unit	63,347	18,252	522	28.8	0.7	18,969	516	29.9	0.7	717	*	1.1	*
In male householder unit	32,307	6,671	310	20.6	0.9	7,071	313	21.9	0.9	400	*	1.2	*
In new SPM unit	26,939	4,744	308	17.6	1.0	5,039	305	18.7	1.0	296	*	1.1	*
Race and Hispanic Origin													
White	241,586	30,531	665	12.6	0.3	34,339	732	14.2	0.3	3,808	*	1.6	*
White, not Hispanic	195,148	17,875	515	9.2	0.3	21,406	586	11.0	0.3	3,531	*	1.8	*
Black	39,696	9,996	446	25.2	1.1	10,180	405	25.6	1.0	185	*	0.5	*
Asian	16,094	2,652	201	16.5	1.2	2,715	215	16.9	1.3	63		0.4	
Hispanic (any race)	52,358	14,300	492	27.3	0.9	14,589	502	27.9	1.0	289	*	0.6	*
Nativity													
Native born	268,851	35,472	710	13.2	0.3	39,280	754	14.6	0.3	3,808	*	1.4	*
Foreign born	39,976	9,962	371	24.9	0.8	10,288	387	25.7	0.9	326	*	0.8	*
Naturalized citizen	17,934	3,082	178	17.2	0.9	3,280	184	18.3	0.9	198	*	1.1	*
Not a citizen	22,042	6,880	317	31.2	1.2	7,007	330	31.8	1.3	127	*	0.6	*
Tenure													
Owner	206,718	16,530	574	8.0	0.3	19,955	615	9.7	0.3	3,425	*	1.7	*
Owner/Mortgage	136,699	9,346	456	6.8	0.3	11,114	479	8.1	0.3	1,768	*	1.3	*
Owner/No mortgage/rentfree	73,418	7,887	383	10.7	0.5	9,580	397	13.0	0.5	1,693	*	2.3	*
Renter	98,710	28,200	742	28.6	0.7	28,873	735	29.3	0.6	673	*	0.7	*
Residence													
Inside MSAs	261,455	39,807	821	15.2	0.3	43,203	894	16.5	0.3	3,396	*	1.3	*
Inside principal cities	100,302	20,811	656	20.7	0.6	21,681	714	21.6	0.6	870	*	0.9	*
Outside principal cities	161,153	18,996	630	11.8	0.3	21,521	702	13.4	0.4	2,525	*	1.6	*
Outside MSAs	47,372	5,627	454	11.9	0.7	6,365	492	13.4	0.7	738	*	1.6	*
Region													
Northeast	55,035	7,597	334	13.8	0.6	8,232	334	15.0	0.6	635	*	1.2	*
Midwest	66,115	7,555	359	11.4	0.5	8,431	347	12.8	0.5	877	*	1.3	*
South	115,068	16,634	610	14.5	0.5	18,372	642	16.0	0.6	1,738	*	1.5	*
West	72,610	13,648	489	18.8	0.7	14,533	511	20.0	0.7	885	*	1.2	*
Health Insurance coverage													
With private insurance	197,323	11,790	430	6.0	0.2	15,000	476	7.6	0.2	3,210	*	1.6	*
With public, no private insurar	62,891	18,936	489	30.1	0.7	19,587	486	31.1	0.7	652	*	1.0	*
Not insured	48,613	14,708	457	30.3	0.8	14,981	451	30.8	0.8	273	*	0.6	*
Work Experience													
Total, 18 to 64 years	193,213	27,757	554	14.4	0.3	29,971	578	15.5	0.3	2,213	*	1.1	*
All workers	144,163	12,279	330	8.5	0.2	13,585	349	9.4	0.2	1,306	*	0.9	*
Worked full-time, year-round	97,443	4,290	172	4.4	0.2	4,967	177	5.1	0.2	677	*	0.7	*
Less than full-time, year-rour	46,720	7,989	258	17.1	0.5	8,618	278	18.4	0.6	629	*	1.3	*
Did not work at least 1 week	49,049	15,478	389	31.6	0.7	16,386	400	33.4	0.7	907	*	1.8	*
Disability Status													
Total, 18 to 64 years	193,213	27,757	554	14.4	0.3	29,971	578	15.5	0.3	2,213	*	1.1	*
With a disability	14,968	3,698	164	24.7	0.9	4,133	186	27.6	1.1	434	*	2.9	*
With no disability	177,309	23,971	523	13.5	0.3	25,746	527	14.5	0.3	1,775	*	1.0	*

*Statistically different from zero at the 90 percent confidence level.

**Includes unrelated individuals under the age of 15.

†A 90 percent confidence interval is a measure of an estimate's variability. The larger the confidence interval in relation to the size of the estimate, the less reliable the estimate. Confidence intervals shown in this table are based on standard errors calculated using replicate weights. For more information see "Standard Errors and Their Use" at <www.census.gov/hhes/www/p60_243sa.pdf>.

-Federal surveys give respondents the option of reporting more than one race. Therefore, two basic ways of defining a race group are possible. A group such as Asian may be defined as those who reported Asian and no other race (the race-alone or single-race concept) or as those who reported Asian regardless of whether they also reported another race (the race-alone-or-in-combination concept). This table shows data using the first approach (race alone). The use of the single-race population does not imply that it is the preferred method of presenting or analyzing data. The Census Bureau uses a variety of approaches. Information on people who reported more than one race, such as White ***and*** American Indian and Alaska Native or Asian ***and*** Black or African American, is available from Census 2010 through American FactFinder. About 2.9 percent of people reported more than one race in Census 2010. Data for American Indians and Alaska Natives, Native Hawaiians and Other Pacific Islanders, and those reporting two or more races are not shown separately.

-The "Outside metropolitan statistical areas" category includes both micropolitan statistical areas and territory outside of metropolitan and micropolitan statistical areas. For more information, see "About Metropolitan and Micropolitan Statistical Areas" at <www.census.gov/population/www/estimates/aboutmetro.html>.

-The sum of those with and without a disability does not equal the total because disability status is not defined for individuals in the Armed Forces.

Source: U.S. Census Bureau, Current Population Survey, 2012 Annual Social and Economic Supplement.

Table 6: Distribution of People in Total and Poverty Population: 2011

(Numbers in thousands, confidence intervals (C.I.) in thousands or percentage points as appropriate. People as of March of the following year. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see www.census.gov/apsd/techdoc/cps/cpsmar12.pdf)

	Total Population		SPM with MIT		SPM		Difference SPM vs SPM with MIT	
	Est.	90 percent C.I.† (+/-)	Est.	90 percent C.I.† (+/-)	Est.	90 percent C.I.† (+/-)		
All People	308,827	-	45,433	855	49,695	905		
	(percent of column total)							
Sex								
Male	49.0	0.0	46.3	0.4	46.5	0.4	0.2	*
Female	51.0	0.0	53.7	0.4	53.5	0.4	-0.2	*
Age								
Under 18 years	24.0	0.0	28.3	0.5	26.9	0.5	-1.4	*
18 to 64 years	62.6	0.1	61.1	0.6	60.5	0.5	-0.6	*
65 years and older	13.4	0.1	10.6	0.4	12.6	0.4	2.0	*
Type of Unit								
In married couple unit	60.3	0.4	34.7	1.1	37.3	1.0	2.6	*
In female householder unit	20.5	0.3	40.2	1.0	38.3	0.9	-1.9	*
In male householder unit	10.5	0.2	14.7	0.6	14.3	0.6	-0.4	*
In new SPM unit	8.7	0.2	10.4	0.6	10.2	0.6	-0.3	
Race and Hispanic Origin								
White	78.2	0.0	67.2	0.9	69.3	0.8	2.1	*
White, not Hispanic	63.2	0.1	39.3	0.9	43.2	0.9	3.8	*
Black	12.9	0.0	22.0	0.9	20.5	0.7	-1.5	*
Asian	5.2	0.1	5.8	0.4	5.5	0.4	-0.4	*
Hispanic (any race)	17.0	0.0	31.5	0.9	29.4	0.8	-2.0	*
Nativity								
Native born	87.1	0.2	78.1	0.7	79.2	0.6	1.2	*
Foreign born	12.9	0.2	21.9	0.7	20.8	0.6	-1.2	*
Naturalized citizen	5.8	0.1	6.8	0.4	6.6	0.3	-0.2	*
Not a citizen	7.1	0.2	15.1	0.6	14.1	0.6	-1.0	*
Tenure								
Owner	66.9	0.4	36.4	1.1	40.3	1.0	3.9	*
Owner/Mortgage	44.3	0.4	20.6	0.9	22.4	0.9	1.9	*
Owner/No mortgage/rentfree	23.8	0.4	17.4	0.8	19.3	0.7	2.0	*
Renter	32.0	0.4	62.1	1.1	58.3	1.0	-3.8	*
Residence								
Inside MSAs	84.7	0.9	87.6	0.9	87.2	1.0	-0.5	*
Inside principal cities	32.5	0.6	45.8	1.2	43.7	1.2	-2.1	*
Outside principal cities	52.2	0.8	41.8	1.2	43.4	1.2	1.6	*
Outside MSAs	15.3	0.9	12.4	0.9	12.8	1.0	0.5	*
Region								
Northeast	17.8	0.1	16.7	0.7	16.6	0.7	-0.1	
Midwest	21.4	0.1	16.6	0.7	17.0	0.7	0.4	*
South	37.3	0.1	36.6	1.1	37.1	1.0	0.5	*
West	23.5	0.1	30.0	0.9	29.3	0.8	-0.7	*
Health Insurance coverage								
With private insurance	63.9	0.3	25.9	0.8	30.3	0.8	4.3	*
With public, no private insurance	20.4	0.3	41.7	0.8	39.5	0.7	-2.2	*
Not insured	15.7	0.2	32.4	0.7	30.2	0.7	-2.2	*
Work Experience								
Total, 18 to 64 years	62.6	0.1	61.1	0.6	60.5	0.5	-0.6	*
All workers	46.7	0.2	27.0	0.6	27.4	0.5	0.4	*
Worked full-time, year-round	31.6	0.2	9.4	0.3	10.0	0.3	0.6	*
Less than full-time, year-round	15.1	0.2	17.6	0.5	17.4	0.5	-0.2	*
Did not work at least 1 week	15.9	0.2	34.1	0.6	33.1	0.6	-1.0	*
Disability Status								
Total, 18 to 64 years	62.6	0.1	61.1	0.5	60.5	0.5	-0.6	*
With a disability	4.8	0.1	8.1	0.3	8.3	0.3	0.2	*
With no disability	57.4	0.2	52.8	0.6	51.9	0.6	-0.8	*

*Statistically different from zero at the 90 percent confidence level.

**Includes unrelated individuals under the age of 15.

†A 90 percent confidence interval is a measure of an estimate's variability. The larger the confidence interval in relation to the size of the estimate, the less reliable the estimate. Confidence intervals shown in this table are based on standard errors calculated using replicate weights. For more information see "Standard Errors and Their Use" at <www.census.gov/hhes/www/p60_243sa.pdf>.

-Federal surveys give respondents the option of reporting more than one race. Therefore, two basic ways of defining a race group are possible. A group such as Asian may be defined as those who reported Asian and no other race (the race-alone or single-race concept) or as those who reported Asian regardless of whether they also reported another race (the race-alone-or-in-combination concept). This table shows data using the first approach (race alone). The use of the single-race population does not imply that it is the preferred method of presenting or analyzing data. The Census Bureau uses a variety of approaches. Information on people who reported more than one race, such as White ***and*** American Indian and Alaska Native or Asian ***and*** Black or African American, is available from Census 2010 through American FactFinder. About 2.9 percent of people reported more than one race in Census 2010. Data for American Indians and Alaska Natives, Native Hawaiians and Other Pacific Islanders, and those reporting two or more races are not shown separately.

-The "Outside metropolitan statistical areas" category includes both micropolitan statistical areas and territory outside of metropolitan and micropolitan statistical areas. For more information, see "About Metropolitan and Micropolitan Statistical Areas" at <www.census.gov/population/www/estimates/aboutmetro.html>.

-The sum of those with and without a disability does not equal the total because disability status is not defined for individuals in the Armed Forces.

Source: U.S. Census Bureau, Current Population Survey, 2012 Annual Social and Economic Supplement.

Summary and Conclusions

This year the Census Bureau, with support from BLS, released the third report on the Supplemental Poverty Measure (SPM). The SPM recognizes the necessity of accounting for medical care needs in a poverty measure. The approach is to deduct actual reported out of pocket medical care expenditures from family resources before evaluating where a family stands in relation to the poverty threshold. The SPM thresholds are based on expenditures for food, clothing, shelter and utilities plus a little bit more for other personal items. Medical care spending is not included in the list of items that define the SPM thresholds.

How to incorporate medical expenses in a poverty measure was a source of debate following the release of the NAS study to improve the measure of poverty. A second approach was proposed that would enhance the portability of poverty thresholds for use with a variety of data sources. In fact, many research groups using the American Community Survey for SPM estimates have preferred to use this second method to incorporate health care needs in a poverty measure for local areas. The second measure examined in this paper adds health care out-of-pocket expenditures in the calculation of SPM thresholds for the two-adult, two-child reference family. Once the reference family threshold is estimated, thresholds for families other than the reference family are produced using what we refer to as a medical equivalence scale. These are based characteristics associated with variations in medical care utilization and cost and include family size, age, and health insurance coverage.

In this paper we compare poverty rates using two measures; the SPM approach of deducting medical care expenses from resources to an alternative approach of incorporating medical care expenses directly into SPM thresholds. Comparing these measures shows that poverty rates are lower using MOOP in the thresholds for some groups suggesting that, for these, self-reported MOOP expenditures in the CPS, that are subtracted from each units' resources in the SPM, are higher than the mean values that are represented in the SPM MIT thresholds.

Further work will investigate characteristics of the estimation sample that contribute to the FCSUM thresholds, particularly in comparison to reported amounts in the CPS ASEC for different groups that result in these different poverty rates. In addition, other approaches to including health care in a poverty measure will be investigated.

References

(Many of the unpublished working papers listed here are available at http://www.census.gov/www/hhes/povmeas.htm)

Banthin, Jessica S. and Thomas M. Selden (1999), "Accounting for Medical Care Burdens in Poverty Measures," Working Paper, Agency for Healthcare Research and Quality, Rockville, MD. Presented at the American Economic Association meetings, January 2000.

Banthin, Jessica, Thesia I. Garner, and Kathleen Short, "Medical Care Needs in Poverty Thresholds: Problems Posed by the Uninsured." Agency for Healthcare Research and Quality, Presented at the American Economic Association meetings, January 2000.

Bavier, Richard, "Medical Needs and the Poverty Thresholds", Poverty Measurement Working Paper, Census Bureau, 1998.

Bavier, Richard, "Medical Out-of-Pocket Spending in Poverty Thresholds," Poverty Measurement Working Paper, Census Bureau, October 2000.

Betson, David, Linda Giannarelli and Sheila R. Zedlewski. "Workshop on Poverty Measurement Using the American Community Survey." Urban Institute. July 18, 2011. http://www.urban.org/publications/412396.html

Betson, David, "Poor Old Folks: Have Our Methods of Poverty Measurement Blinded Us to Who is Poor?" University of Notre Dame, Poverty Measurement Working Paper, Census Bureau, 1995b.

Betson, David, "Imputing Medical Out-of-Pocket Expenditures from NMES Data," University of Notre Dame, Poverty Measurement Working Paper, Census Bureau, December 1997a.

Betson, David, "In Search of an Elusive Truth, 'How Much Do Americans Spend on Their Health Care?' " University of Notre Dame, Poverty Measurement Working Paper, Census Bureau, April 7, 1997b.

Sarah Bohn, Caroline Danielson, Matt Levin, Marybeth Mattingly, Christopher Wimer, *The California Poverty Measure: A New Look at the Social Safety Net ,* The Public Policy Institute of California in collaboration with the Stanford Center on Poverty and Inequality, October 2013.

Cable, Dustin, *The Virginia Poverty Measure: An Alternative Poverty Measure for The Commonwealth,* Demographic and Workforce Group, Weldon Cooper Center for Public Service, University of Virginia, may 2013.

Caswell, Kyle and Brett O'Hara, "Medical Out of Pocket Spending in the SPM," presented at the Annual Meeting of the Allied Social Science Associations (ASSA) in Denver Colorado, January 3, 2011 in the Society of Government Economists Session (SGE). Poverty Measurement Working Paper, Census Bureau.

Caswell, Kyle and Kathleen Short, "Medical out-of-Pocket Spending of the Uninsured: Differential Spending and the Supplemental Poverty Measure," paper presented at the Joint Statistical Meetings, Miami, Florida, August 2011. Poverty Measurement Working Paper, U.S. Census Bureau.

Citro, Constance F., and Robert T. Michael (eds.), *Measuring Poverty: A New Approach*, Washington, D.C.: National Academy Press, 1995.

CNSTAT, *Measuring Poverty, Summary of a Workshop, 2005.* *http://www.nap.edu/catalog.php?record_id=11166*

Isaacs, Julia B, Joanna Y. Marks, Timothy M. Smeeding and Katherine A. Thornton. 2011. "Wisconsin Poverty Report: Methodology and Results for 2009," Institute for Research on Poverty University of Wisconsin-Madison.

ITWG, Observations from the Interagency Technical Working Group on Developing a Supplemental Poverty Measure (Interagency), March 2010, available at www.census.gov/hhes/www/poverty/SPM_TWGObservations.pdf

Korenman, Sanders and Dahlia Remler, "Rethinking Elderly Poverty: Time for a Health Inclusive Poverty Measure?," NBER Working Paper 18900, National Bureau of Economic Research, March 2013.

National Research Council, *Experimental Poverty Measures: Summary of a Workshop,* John Iceland Rapporteur. Planning Group for the Workshop to Assess the Current Status of Actions Taken in Response to *Measuring Poverty : A New Approach*, Committee on National Statistics, Division of Behavioural and Social Sciences and Education. Washington DC: The National Academies Press. 2005.

National Research Council and Institute of Medicine, *Medical Care Economic Risk: Measuring Financial Vulnerability from Spending on Medical Care, P*anel on Measuring Medical Care Risk in Conjunction with the New Supplemental Income Poverty Measure, M.J. O'Grady and G.S. Wunderlich, Eds Committee on National Statistics, Division of Behavioural and Social Sciences and Education. Washington DC: The National Academies Press. 2012.

New York City Center for Economic Opportunity. "Policy Affects Poverty: The CEO Poverty Measure 2005-2009: A Working Paper by the NYC Center for Economic Opportunity. 2011.

New York City Center for Economic Opportunity. "The CEO Poverty Measure 2005-2010: A Working Paper by the NYC Center for Economic Opportunity. April 2012.

Short, Kathleen. *The Research Supplemental Poverty Measure: 2012,* U.S. Census Bureau, *Current Population Reports*, P60-247, November 2013, http://www.census.gov/hhes/povmeas/methodology/supplemental/research/Short_ResearchSPM2012.pdf .

Short, Kathleen. *The Research Supplemental Poverty Measure: 2011,* U.S. Census Bureau, *Current Population Reports*, P60-244, November 2012,

http://www.census.gov/hhes/povmeas/methodology/supplemental/research/Short_ResearchSPM2011.pdf .

Short, Kathleen and Thesia Garner, 'Experimental Poverty Measure Under Alternate Treatments of Medical Out-of-Pocket Expenditures,' August 2002, Monthly Labor Review, http://stats.bls.gov/opub/mlr/2002/08/art1full.pdf

Short, Kathleen S. (2001, October). "Experimental poverty measures: 1999." Current Population Reports P60-216, U.S. Census Bureau, Washington, D.C.

Sommers, Ben and Don Oellerich," The Poverty-Reducing Effect of Medicaid: An Analysis Using the Census Bureau's New Supplemental Poverty Measure," Journal of Health Economics, 32, 2013, 816-832.

Wolfe, Barbara, "Incorporating Health Care Needs into a Measure of Poverty: An Exploratory Proposal," *Focus*, Volume 19, Number 2, Spring 1998, pp.29-31.

Wheaton, Laura, Urban Institute, email communications with Thesia I. Garner, Bureau of Labor Statistics, Washington, DC, April 2012.

Zedlewski, Sheila, Linda Giannarelli, Laura Wheaton, and Joyce Morton. "Measuring Poverty at the State Level." The Urban Institute. 2010.

Appendix Table A1:

Table A10. Mean and Median MOOP, MEPS 1996, (w/ adjustment for uninsured) 1999 dollars					
Characteristics	**MOOP estimated using MEPS**		**Risk**	**NAS model**	**MOOP in**
	Mean	**Median**	**Factors**	**Mean**	**Thresholds**
Reference family	$2,352	$1,800	1.00	$1,781	$1,181
Families with no elderly members					
Private, 1 person					
Good health	1,157	762	0.42	858	500
Fair/poor health	1,974	1,394	0.77	850	915
Private, 2 people					
Good health	2,131	1,596	0.89	1,908	1,047
Fair/poor health	2,979	2,029	1.13	1,950	1,331
Private, 3+ people					
Good health	2,409	1,804	1.00	1,862	1,184
Fair/poor health	2,660	2,263	1.26	1,802	1,485
Public, 1 person					
Good health	371	32	0.02	506	21
Fair/poor health	501	124	0.07	461	81
Public, 2+ people					
Good health	300	60	0.03	295	39
Fair/poor health	574	165	0.09	355	108
Uninsured, 1 person					
Good health	1,127	866	0.48	229	568
Fair/poor health	2,023	1,625	0.90	196	1,066
Uninsured, 2+ people					
Good health	2,301	1,829	1.02	594	1,200
Fair/poor health	2,766	1,952	1.08	535	1,281
Families with elderly members					
Private, 1 person					
Good health	2,534	2,144	1.19	2,080	1,407
Fair/poor health	3,163	2,356	1.31	1,986	1,546
Private, 2+ people					
Good health	4,169	3,461	1.92	3,128	2,271
Fair/poor health	4,863	4,132	2.30	3,055	2,711
Public, 1 person					
Good health	1,123	880	0.49	1,896	577
Fair/poor health	1,199	808	0.45	1,848	530
Public, 2+ people					
Good health	2,173	1,629	0.91	2,917	1,069
Fair/poor health	2,425	1,825	1.01	2,619	1,197
Source: 1996 Medical Expenditure Panel Survey and Banthin et al., 2001.					